

Application No.: 09/980,370

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Docket No.: 229752001500

AMENDMENTS TO THE CLAIMSRECEIVED  
CENTRAL FAX CENTER

JUN 07 2007

Claim 1 (Previously presented): A method for the treatment of infection by a microorganism in a biological environment from where the microorganism acquires iron, heme or porphyrin said method comprising administering to said environment an effective amount of an agent for a time and under conditions sufficient to antagonize the interaction between a molecule derived from said microorganism having an HA2 domain and an HA2-binding motif on a porphyrin containing molecule present in said biological environment, wherein the agent antagonizes the interaction between the molecule derived from said microorganism having the HA2 domain and the HA2-binding motif on the porphyrin containing molecule by specifically binding to one or both of (a) the HA2 domain of the molecule, and (b) the HA2-binding motif on the porphyrin containing molecule.

Claim 2 (Original): A method according to Claim 1 wherein the microorganism is *Porphyromonas gingivalis* or a related microorganism.

Claim 3 (Previously Presented): A method according to claim 1 wherein the biological environment is a mammal or reptile or insect or bird or species of fish.

Claim 4 (Original): A method according to Claim 3 wherein the mammal is a primate, human, livestock animal or a companion animal.

Claim 5 (Original): A method according to any one of Claims 1 to 4 when used for the treatment of a disease condition in the oral cavity, nasopharynx, oropharynx, vagina or urethra or other vascular or mucosal regions or cavities or in the hooves of livestock animals.

Claim 6 (Previously presented): A method according to any one of Claims 1 to 4 wherein the HA2-containing molecule is a gingipain, an hagA gene product or a TonB-dependent protein or a homologue thereof.

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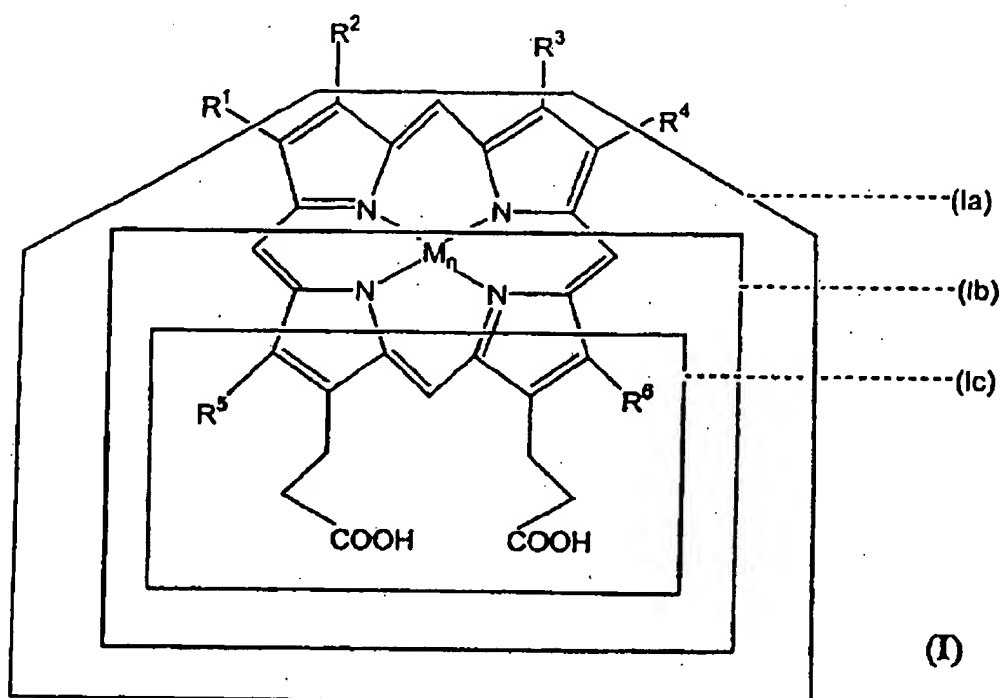
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Claim 7 (Previously Presented): A method according to Claim 1 wherein the porphyrin moiety is a heme.

Claim 8 (Previously presented): A method according to Claim 7 wherein the HA2-binding motif comprises a region comprising or within substructure (Ic) of structure (I):



wherein  $R_1$  and  $R_6$  are the same or different and each is an alkyl such as a methyl, ethyl or propyl group, or hydrogen, hydroxyl, carboxyl, aldehyde, acetaldehyde or keto group,  $M$  is a metal ion in various oxidation states and is optionally present such that  $n$  is 0 or 1 or a structurally or functional homologue thereof.

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Claim 9 (Currently Amended): ~~A method~~ The method according to claim 1 for the treatment of infection by a microorganism in a mammal, said microorganism substantially requiring exogenous iron, heme or porphyrin for growth or maintenance wherein said method comprises administering to said mammal an effective amount of an agent for a time and under conditions sufficient to antagonize the interaction between a molecule derived from said microorganism and having an HA2 domain and an HA2 binding moiety on a porphyrin-containing molecule and wherein said HA2 domain comprises:

- (i) an amino acid sequence substantially encoded by the nucleotide sequence set forth in SEQ ID NO:5 or a nucleotide sequence having at least about 40% similarity 90% identity thereto or capable of hybridizing thereto under ~~[[low]]~~ stringency conditions comprising ~~from at least about 0 to at least about 15% w/v formamide and from at least about 1M to at least about 2M salt of 0.1xSSC, and 0.1% w/v SDS at 65 °C;~~ and/or
- (ii) an amino acid sequence substantially as set forth in SEQ ID NO:6 or an amino acid sequence having at least about ~~[[40%]]~~ 90% similarity thereto ~~or at least about 20% identity after optimum alignment with same sequence;~~

~~wherein said amino acid sequence is capable of interacting with an HA2 binding moiety on a porphyrin-containing molecule such as but not limited to hemoglobin or a precursor form thereof or part thereof such as heme, and~~

~~further wherein the agent antagonizes the interaction between the molecule derived from said microorganism having the HA2 domain and the HA2 binding motif on the porphyrin-containing molecule by specifically binding to one or both of (a) the HA2 domain of the molecule, and (b) the HA2 binding motif on the porphyrin-containing molecule.~~

Claim 10 (Previously presented): A method for treatment of periodontal, pulmonary, vaginal, urethral or hoof disease resulting from infection by *P. gingivalis* or related microorganism in a mammal said method comprising administering to said mammal an effective amount of a agent

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for a time and under conditions sufficient to antagonize the interaction between a *P. gingivalis*-derived molecule having an HA2 domain and an HA2-binding motif on hemoglobin, wherein the agent antagonizes the interaction between the *P. gingivalis*-derived molecule having the HA2 domain and the HA2-binding motif on the hemoglobin by specifically binding to one or both of (a) the HA2 domain of the *P. gingivalis*-derived molecule, and (b) the HA2-binding motif on the hemoglobin.

Claim 11 (Currently Amended): A method for the treatment of *P. gingivalis* infection or infection by a related microorganism in a mammal, said method comprising administering to said mammal an effective amount of an agent for a time and under conditions sufficient to antagonize the interaction between a *P. gingivalis*-derived HA2-containing molecule comprising the amino acid sequence ALNPDNYLISKDVTG (SEQ ID NO:1) or ALNPDNYLISKDVTGATKVKY (SEQ ID NO:8) or an amino acid sequence having at least ~~[[40%]]~~ 90% similarity to SEQ ID NO:1 or SEQ ID NO:8 ~~or at least about 20% identity after optimum~~ after optimal alignment with the same sequence or an amino acid sequence encoded by the nucleotide sequence-SEQ ID NO:7 or a nucleotide sequence having at least ~~40% similarity~~ 90% identity thereto or a nucleotide sequence capable of hybridizing thereto under ~~[[low]]~~ high stringency conditions and an HA2-binding motif comprising and including propionic acid groups or anionic or salt forms thereof, wherein the agent antagonizes the interaction between the *P. gingivalis*-derived HA2-containing molecule and the HA2-binding motif by specifically binding to one or both of (a) the HA2 domain of the *P. gingivalis*-derived molecule, and (b) the HA2-binding motif.

Claims 12-17 (cancelled)

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Claim 18 (Previously Presented): A method according to claim 5 wherein the HA2-containing molecule is a gingipain, an hagA gene product or a TonB-dependent protein such as but not limited to Tla protein or a homologue thereof.

Claim 19 (Previously Presented): A method according to claim 6 wherein the porphyrin moiety is a heme.

Claim 20 (Cancelled).

Claim 21 (Previously presented): A method according to claim 6, wherein the TonB-dependent protein is a Tla protein.

Claim 22 (Previously presented): A method according to claim 8, wherein the metal ion M in various oxidation states is selected from the group consisting of Fe, Fe<sup>++</sup> and Fe<sup>+++</sup>.

Claim 23 (Previously presented): A method according to claim 9, wherein the molecule derived from said microorganism and having an HA2 domain and an HA2-binding moiety on a porphyrin-containing molecule is hemoglobin or a precursor form thereof or part thereof or heme.

Claim 24 (Previously presented): A method according to claim 11, wherein the HA2-binding motif comprising and including propionic acid groups or anionic or salt forms thereof is defined by substructure (Ic) in Formula (I) on a porphyrin-containing molecule.

Claim 25 (Previously presented): A method according to claim 24, wherein the porphyrin-containing molecule is hemoglobin or a precursor form thereof or part thereof or heme.

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